UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/614,635	07/12/2000	Ulrich Sigmund	RAV10009	2264

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EXAMINER
WOOD, WILLIAM H

ART UNIT	PAPER NUMBER
2193	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/614,635	SIGMUND, ULRICH
	Examiner	Art Unit
	William H. Wood	2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-21* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some *　c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claims 1-8 and 10-21 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the

fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection.

Since this application is eligible for continued examination under 37 CFR 1.114,

and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the

previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 15 April 2005 has been entered.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-3, 7-8, 11-14, 18, 19 and 21 are rejected under 35 U.S.C. 102(b)

as being anticipated by **Aho** et al., <u>Compilers: Principles, Techniques, and</u>

<u>Tools</u>.

Claim 1

Aho disclosed an apparatus for generating computer assembly code *(pages 1-*

24, chapter 1; a compiler) comprising:

- an abstract routine generator for receiving a data stream comprising a multimedia routine *(data stream comprising a multimedia routine interpreted as instructions using various media or memory)* and for outputting a non-processor-specific abstract representation thereof during runtime *(page 10, figure 1.9; page 463-512, in particular page 464; further note page 20, section "Front and Back Ends")*; and

- a translator for said abstract routine generator for receiving said abstract representation and for outputting processor specific final code translated from said non-processor-specific abstract representation for processing multimedia input data during said runtime *(pages 463-464, figures 8.1 and 8.2; also first sentence page 463; further note page 20, section "Front and Back Ends")*.

Claim 2

Aho disclosed the apparatus of Claim 1, wherein in said abstract routine generator builds an abstract routine during runtime *(page 1-24; chapter 1, inherent that generator is operating during its runtime)*.

Claim 3

Aho disclosed the apparatus of Claim 1, wherein said abstract routine generator builds an abstract routine in the form of a graph *(page 463-512, chapter 8, in particular page 464, section 8.1, graphical representations of intermediate languages)*.

Claim 7

Aho disclosed the apparatus of Claim 3, wherein said graph is input to said translator *(page 463, figure 8.1, "code generator")*.

Claim 8

Aho disclosed the apparatus of Claim 3, wherein the output of said translator is in assembly code *(page 5, figure 1.3, compiler outputs assembly to assembler)*.

Claim 11

Aho disclosed the apparatus of Claim 3, wherein said graph is a function of any of source block, target block, change in the block, color, stride, change in stride, display block, and spatial filtering *(page 463-722, numerous examples/figures of graphs representing blocks of code)*. The above phrase "is a function of any of the" is interpreted as "or" (in the alternative) in the rejection.

Claims 12, 13, 14, 18, 19 and 21

The limitations of method claims 12, 13, 14, 18, 19 and 21 correspond to apparatus claims 1, 2, 3, 7, 8 and 11 and are rejected in the same manner.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 5-6, 10, 16, 17 and 20 are rejected under 35 U.S.C. 103(a) as

being unpatentable over **Aho** et al., Compilers: Principles, Techniques, and

Tools.

Claims 5 and 6

Aho did not explicitly state the apparatus of Claim 1, wherein said multimedia

data comprise image or audio input data. Official Notice is taken that it was

known at the time of invention to utilize instructions which manipulate audio and

image data (any instruction manipulating memory containing such information).

It would have been obvious to one of ordinary skill in the art at the time of

invention to implement the compiling system of **Aho** with such audio and image

data. This implementation would have been obvious because one of ordinary

skill in the art would be motivated to compile for all instructions manipulating all

data in a piece of software or code (audio and image data have been common

since the 1980's, thus compilers compile for them).

Claim 10

Aho did not explicitly state the apparatus of Claim 1, wherein said processor-

specific code performs any of the operations of add, sub, multiply, average,

maximum, minimum, compare, and, or, xor, pack, unpack, and merge on said

input data. **Aho** did not explicitly discuss the processor-specific

commands/operations issued by a code generator. Official Notice is taken that it

was known at the time of invention for processors to perform specific

functions/operations, such as add, sub, multiply and so on (though **Aho**

discusses using a backend section of a compiler for processor specifics, page

20). It would have been obvious to one of ordinary skill in the art at the time of

invention to implement the compiler of **Aho** with processor-specific functionality

as above. This implementation would have been obvious because one of

ordinary skill in the art would be motivated to generate code, which would

actually operate on a processor (part of the purpose of a compiler). The above

phrase "performs any of the operations" is interpreted as "or" (in the alternative)

in the rejection.

Claims 16, 17 and 20

The limitations of method claims 16, 17 and 20 correspond to apparatus claims

5, 6 and 10 and are rejected in the same manner.

5.   Claims 9 and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Aho** et al., Compilers: Principles, Techniques, and Tools in

further view of "Dictionary of **Computing**".

Claim 9

Aho did not explicitly state the apparatus of Claim 1, wherein said translator's configuration can be changed by use of a dynamic library link. **Computing** demonstrated that it was known at the time of invention to utilize dynamic link libraries to aid programs and make corrections to those programs (page 149, DLL). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the elements (such as code generator/translator) of **Aho's** compilers with dynamic link libraries as found in **Computing's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to aid in the flexibility of the various components through making corrections and updates (as suggested by the definition) and thus altering the configuration.

Claim 22

The limitations of method claim 22 correspond to apparatus claim 9 and are rejected in the same manner.

6.   Claims 1-3, 7-8, 10-14 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Benson** (USPN 5,307,492).

Claim 1

Benson disclosed an apparatus comprising:

- ◆ an abstract routine generator for receiving a data stream comprising a multimedia routine and for outputting a generic abstract representation thereof during runtime *(column 3, line 64 to column 4, line 11; standard compilers with front and back ends)*; and

- ◆ a translator for said abstract routine generator for receiving said abstract representation and for outputting processor specific code translated from said abstract representation for processing multimedia input data during said runtime *(column 4, lines 5-11; standard compilers with front and back ends, producing for specific processor types)*.

Benson did not explicitly state generating assembly code. **Benson** demonstrated that it was known at the time of invention to use the translating system to produce assembly in the target architecture (column 3, lines 50-55). It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Benson**'s translation with producing assembly as found in **Benson**'s own teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide either implementation as **Benson** indicated both were possible and therefore needed.

Claim 2

Benson disclosed the apparatus of Claim 1, wherein in said abstract routine generator builds an abstract routine during runtime *(inherent that analyzer/generator/translator is operating during its runtime)*.

Claim 3

Benson disclosed the apparatus of Claim 1, wherein said abstract routine

generator builds an abstract routine in the form of a graph *(column 4, lines 5-6)*.

Claim 7

Benson disclosed the apparatus of Claim 3, wherein said graph is input to said

translator *(column 4, lines 5-11, analyzing/generator relates to translator)*.

Claim 8

Benson did not explicitly state the apparatus of Claim 3, wherein the output of

said translator is in assembly code. **Benson** demonstrated that it was known at

the time of invention to use the translating system to produce assembly in the

target architecture (column 3, lines 50-55). It would have been obvious to one of

ordinary skill in the art at the time of invention to implement **Benson**'s translation

with producing assembly as found in **Benson**'s own teaching. This

implementation would have been obvious because one of ordinary skill in the art

would be motivated to provide either implementation as **Benson** indicated both

were possible and therefore needed.

Claim 10

Benson did not explicitly state the apparatus of Claim 1, wherein said processor-

specific code performs any of the operations of add, sub, multiply, average,

maximum, minimum, compare, and, or, xor, pack, unpack, and merge on said

input data. However, **Benson** demonstrated that it was known at the time of

invention for processors to perform specific functions/operations, such as add,

sub, multiply and so on (column 9, lines 47-50). It would have been obvious to

one of ordinary skill in the art at the time of invention to implement the output of

the system of **Benson** with processor-specific functionality as above. This

implementation would have been obvious because one of ordinary skill in the art

would be motivated to generate code, which would actually operate on a

processor (part of the purpose of a compiler). The above phrase "performs any

of the operations" is interpreted as "or" (in the alternative) in the rejection.

Claim 11

Benson disclosed the apparatus of Claim 3, wherein said graph is a function of

any of source block, target block, change in the block, color, stride, change in

stride, display block, and spatial filtering *(figures 6 and 7 at least)*. The above

phrase "is a function of any of the" is interpreted as "or" (in the alternative) in the

rejection.

Claims 12-14 and 18-21

The limitations of method claims 12-14 and 18-21 correspond to apparatus

claims 1-3, 7, 8 and 10-11 and are rejected in the same manner.

7.   Claims 4-6 and 15-17 are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Benson** (USPN 5,307,492) in view of **Ansari** et al. (USPN

6,473,897).

Claim 4

Benson did not explicitly state the apparatus of Claim 1, wherein said multimedia

data comprise SIMD input data. **Ansari** demonstrated that it was known at the

time of invention that processors use SIMD (column 5, lines 23-40). It would

have been obvious to one of ordinary skill in the art at the time of invention to

implement the translation system of **Benson** with starting architecture using

SIMD as found in **Ansari**'s teaching. This implementation would have been

obvious because one of ordinary skill in the art would be motivated to convert

from one processor to another (**Benson**: column 3, lines 46-50).

Claim 5

Benson disclosed the apparatus of Claim 1, wherein said multimedia data

comprise image input data. **Ansari** demonstrated that it was known at the time

of invention that processors use MMX (column 5, lines 23-40), which provides

image input data. It would have been obvious to one of ordinary skill in the art at

the time of invention to implement the translation system of **Benson** with starting

architecture using MMX as found in **Ansari**'s teaching. This implementation

would have been obvious because one of ordinary skill in the art would be

motivated to convert from one processor to another (**Benson**: column 3, lines

46-50).

Claim 6

Benson disclosed the apparatus of Claim 1, wherein said multimedia data

comprise audio input data. **Ansari** demonstrated that it was known at the time of

invention that processors use MMX (column 5, lines 23-40), which provides audio

input data. It would have been obvious to one of ordinary skill in the art at the

time of invention to implement the translation system of **Benson** with starting

architecture using MMX as found in **Ansari**'s teaching. This implementation

would have been obvious because one of ordinary skill in the art would be

motivated to convert from one processor to another (**Benson**: column 3, lines

46-50).

Claims 15-17

The limitations of method claims 15-17 correspond to apparatus claims 4-6 and

are rejected in the same manner.

Response to Arguments

8.   Applicant's arguments filed 15 April 2005 have been fully considered but

they are not persuasive. Applicant argued cited prior art fails to disclose non-

processor-specific abstract representation. **Aho** clearly indicates this in page 20,

section "Front and Back Ends". Here it is explained how a front end produces an

abstract representation that is not specific to a processor. The back end is then designed for "different machine[s]". **Benson** is likewise concerned with standard compiler front and back end concepts (column 3, line 64 to column 4, line 11). The claims are too broad to not read upon these well-known and established techniques, which are provided by the above cited references. Therefore, having addressed Applicant's concerns, the rejections are maintained.

Additional note, Applicant's remarks indicate claims 1-22 pending, yet claims 9 and 22 have been cancelled, according to amendments submitted.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
July 9, 2005

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